REMARKS

These remarks are in reply to the Office Action mailed March 21, 2007. Claims 1-22 were pending in the Application prior to the outstanding Office Action. In the Office Action, the Examiner rejected claims 1-22. The present response amends claims 1, 3, 9, 10 and 12, cancels claims 2, 11, and 16-22, and adds claims 23 and 24, leaving for the Examiner's consideration claims 1, 3-10, 12-15, 23 and 24. Reconsideration of the rejections is requested.

Claim Rejections – 35 USC § 112

Claims 1-22 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants request cancellation of claims 2, 11, and 16-22. Applicants respectfully traverse the rejection of claims 1, 3-10 and 12-15.

The Examiner writes that the limitation "without using an external energy source" as recited in the claims is "vague and unclear since the fuel source does comprise an energy source and since a source of energy has to be used to ignite the flame." See OA, page 2. Applicant submits that claims 1 and 3 have been amended to remove the language cited and to more clearly communicate what is being claimed. Applicant respectfully submits that the claims as amended are sufficiently definite, and therefore request that the rejection be removed.

Claim Rejections – 35 USC § 103

Claims 1-7 and 9-22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Selitzer* in view of either *Finche* et al. or *Gorynin* et al. Applicants respectfully traverse the rejection of claims 1, 3-7 and 12-15.

The Examiner writes that "Selitzer teaches the claimed subject matter...but does not set forth the surface modification tool as comprising a flame torch using combustion. Both patents to *Gorynin et al.* and *Fincke et al.* are cited for disclosing flame torches, which cause reactive interaction with substrates, used to modify the surfaces of the substrates." See OA, page 2-3. Applicant submit that nowhere does *Selitzer* in view of either *Gorynin* or *Fincke* teach or suggest "a torch including: an outer tube to communicate a combustible process gas to generate a flame; and an inner tube nested within the outer tube to communicate a reactive precursor to the flame" as recited in claims 1 and 3.

Selitzer teaches an ICP torch (plasma torch) including a plurality of tubes nested within each other (3 quartz tubes as shown in FIG. 2A and 2 tubes as shown in FIG. 6A). The intermediate tube (in FIG. 2A) and outer tube (in FIG. 6A) is sheathed over the plasma and confines the plasma. The inner tube (in both FIGs. 2A and 6A) is used to deliver the central (plasma) gas. Further, a sheath gas is delivered to the intermediate tube (in FIG. 2A) and outer tube (in FIG. 6A) and helps cool down the tube. Nowhere does *Selitzer* teach or

suggest "an outer tube to communicate a combustible process gas to generate a flame; and an inner tube nested within the outer tube to communicate a reactive precursor to the flame" as recited in claim 1 and 3.

Gorynin and *Fincke* fail to remedy the deficiency of *Selitzer*. *Gorynin* teaches that a thermally reactive powder 11 is introduced into to the flame by a feeder. The feeder is position adjacent to the flame and introduces reactive powder 11 to the flame from the side. Nowhere does *Gorynin* teach a feeder nested within an outer tube. *Fincke* teaches 2 different configurations for introducing reactive species to a plasma. The first configuration is shown in FIG. 1 and includes an injector section 14 arranged serially and downstream from the torch section 12. The injectors section 14 includes ports 22 that allow reactants and plasma to mix prior to entering the reactor. See col. 9, lines 13-18. The ports 22 are arranged perpendicular to the plasma stream, and are not nested within the torch section. The second configuration is shown in FIG. 2 and includes an anode injector 64 (in addition to injector ports 60). While the anode injector 64 is located farther upstream than the ports 22 of FIG. 1, the anode injector is still arranged perpendicular to the plasma stream, and is no nested within the torch section.

Combining *Gorynin* and/or *Fincke* with *Selitzer* does not solve this deficiency because nowhere does *Selitzer* suggest introduce anything other than a central plasma gas to an inner tube. *Selitzer* utilizes a separate sheath and inner tube for cooling purposes, and not for introducing a reactive precursor. *Selitzer* relies on the inner tube to deliver process gas to the inductively produced plasma. *Gorynin* and/or *Fincke* cannot be combined with *Selitzer* to introduce a reactive precursor to the inner tube, because such a modification would render *Selitzer* inoperable.

Because *Selitzer* in view of *Gorynin* or *Fincke* fails to teach or suggest all of the features of claims 1 and 3, *Selitzer* in view of *Gorynin* or *Fincke* cannot render claims 1 and 3 obvious under 35 USC 103(a). Dependent claims have at least the features of the independent claims from which they depend, therefore *Selitzer* in view of *Gorynin* or *Fincke* cannot render claims 3-7 and 12-15 obvious under 35 USC 103(a).

Claim 8 stands rejected under 35 U.S.C. 103(a) as being unpatentable over *Selitzer* in view of either *Finche* et al. or *Gorynin* et al. and further in view of *Wagner*. Applicants respectfully traverse the rejection of claim 8. For the reasons given above, *Selitzer* in view of *Gorynin* or *Fincke* cannot render claim 8 obvious under 35 USC 103(a). *Wagner* fails to remedy this deficiency; therefore *Selitzer* in view of *Gorynin* or *Fincke* in further view of *Wagner* cannot render claim 8 obvious under 35 USC 103(a).

Claim Rejections – 35 USC § 102

Claims 1-7, 9-13, and 16-21 stand rejected under 35 U.S.C. 102(a) as being anticipated by *Finche* et al.. Applicants respectfully traverse the rejection of claims 1, 3-7, 12 and 13.

Nowhere does *Finche* disclose "a torch including: an outer tube to communicate a combustible process gas to generate a flame; and an inner tube nested within the outer tube to communicate a reactive precursor to

the flame" as recited in claims 1 and 3. As argued above, *Finche* teaches 2 different configurations for introducing reactive species to a plasma. The first configuration is shown in FIG. 1 and includes an injector section 14 arranged serially and downstream from the torch section 12. The injectors section 14 includes ports 22 that allow reactants and plasma to mix prior to entering the reactor. See col. 9, lines 13-18. The ports 22 are arranged perpendicular to the plasma stream, and are not nested within the torch section. The second configuration is shown in FIG. 2 and includes an anode injector 64 (in addition to injector ports 60). While the anode injector 64 is located farther upstream than the ports 22 of FIG. 1, the anode injector is still arranged perpendicular to the plasma stream, and is no nested within the torch section. Because *Fincke* fails to disclose all of the features of claims 1 and 3, *Fincke* cannot anticipate claims 1 and 3 under 35 USC 102(a). Dependent claims have at least the features of the independent claims from which they depend, therefore *Fincke* cannot anticipate claims 3-7 and 12-15 under 35 USC 102(a).

Claims 1-7, 9-13, and 16-21 stand rejected under 35 U.S.C. 102(b) as being anticipated by *Gorynin* et al.. Applicants respectfully traverse the rejection of claims 1, 3-7, 12 and 13.

Nowhere does *Gorynin* disclose "a torch including: an outer tube to communicate a combustible process gas to generate a flame; and an inner tube nested within the outer tube to communicate a reactive precursor to the flame" as recited in claims 1 and 3. As argued above, *Gorynin* teaches that a thermally reactive powder 11 is introduced into to the flame by a feeder. The feeder is position adjacent to the flame and introduces reactive powder 11 to the flame from the side. Nowhere does *Gorynin* teach a feeder nested within an outer tube. Because *Gorynin* fails to disclose all of the features of claims 1 and 3, *Gorynin* cannot anticipate claims 1 and 3 under 35 USC 102(a). Dependent claims have at least the features of the independent claims from which they depend, therefore *Gorynin* cannot anticipate claims 3-7 and 12-15 under 35 USC 102(a).

Additional Claims

Applicants submit that newly submitted claims 23 and 24 are allowable for at least the reasons given for the allowability of claim 3.

Conclusion

In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowable, and a Notice of Allowance is requested. The Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of a patent.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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